

ABSTRACT

A head mounted display is disclosed that utilizes a single video display screen to transport images to both eyes. Multiple reflections are created by illuminating the display screen from a plurality of directions, or by illuminating the display screen with light beams of differing polarizations. The reflections of the display screen are focused in order to reduce the splitting volume and then redirected by a plurality of reflective surfaces located near the focal point of the display images. Different images may be sent to each eye of a user by interlacing multiple data streams for the display and linking each data stream with a specific illumination direction, or specific polarization.